

WHAT IS CLAIMED:

1. A process for the clarification of water by chemical treatment, comprising adding into the water, separately or together, an effective amount of at least one AP with an effective amount of AmP, including at least one M/H/VH MW AmP, to coagulate particles and to form a flocculated suspension thereof, and wherein,

an AmP/AP ratio (active mass basis) is greater than 1/20;

either a (M/HMW AmP)/AP ratio (active mass basis) is greater than 1/60 or a (VH MW AmP)/AP ratio (active mass basis) is greater than 1/150; and

the water is clarified to a settled turbidity of less than 1.0 NTU.

2. The process of claim 1 wherein residual soluble aluminum of the settled water is less than 0.2 mg/L.

3. The process of claim 1 wherein the IOC content of the settled water is less than 2 mg/L.

4. The process of claim 1 that includes adding an effective amount of AS with the AP and AmP.

5. The process of claim 1 wherein the alkalinity of the raw unclarified water is low.

6. The process of claim 1 wherein the turbidity of the raw unclarified water is low.

7. The process of claim 1 wherein the AmP includes DADMAC.

8. The process of claim 1 wherein the AmP includes Epi-DMA.

9. The process of claim 1 wherein the AmP includes polyacrylamide.

10. The process of claim 1 wherein the AP includes polyaluminum hydroxychloride.

11. A method for blending at least one ammonium solution polymer with at least one aluminum polymer, comprising:

terminating the manufacture of the ammonium solution polymer reaction with an acid other than an acid containing oxides of sulfur;

adjusting the pH of the ammonium solution polymer to less than 6; and

mixing the ammonium solution polymer with an aluminum solution polymer in a method that includes high shear.

12. The method of claim 11 wherein adjusting the pH of the ammonium solution polymer includes adjusting the pH to approximately  $4.25 \pm .25$ .

13. The method of claim 11 wherein terminating the manufacture of the ammonium solution polymer reaction includes terminating the manufacture with HCl.

14. The method of claim 11 that includes storing the blended mixture of ammonium solution polymer and aluminum polymer.

15. The method of claim 11 that includes adding an aluminum salt to the mixture of ammonium solution polymer and aluminum polymer such that the basicity of the total aluminum compound is less than 55%.

16. The method of claim 15 wherein the basicity of the total aluminum compound is less than 45%.

17. A method for blending and at least one aluminum polymer with a polyacrylamide comprising:

mixing, including high shearing, a solution of at least one aluminum polymer; and

adding polyacrylamide to the aluminum polymer at a high shear mixing point.

18. A method of storing a blend of aluminum polymer and/or aluminum salt and/or ammonium polymer in solution, comprising:

storing the blend in an enclosed tank having a vent; and

adding an inert gas blanket to the tank.

19. The method of claim 18 wherein the inert gas blanket includes nitrogen.